

## Claims

- [c1] What is claimed is:
1. A composition comprising:
- (a) at least one inorganic sun-blocking agent;
  - (b) optionally at least one non-endocrine disrupting sunscreen agent;
  - (c) at least one non-endocrine disrupting emollient or mixtures thereof ;
  - (d) and;
  - (e) an optional oil component comprising a carrier oil, preferably an essential oil of a naturally occurring substance;
- said composition capable of protecting skin from harmful effects of radiation including ultraviolet light or sunlight.
- [c2] 2. A composition according to claim 1, wherein said emollient is *aloe barbadensis* Miller.
- [c3] 3. A composition according to claim 2, wherein said emollient includes oligosaccharides of *aloe barbadensis* Miller that inhibit loss of skin immunocompetency.
- [c4] 4. A composition according to claim 1, wherein active sun-blocking and sunscreen agents, emollients, and carrier oils may include other non-endocrine disruptive agents consisting of a sunless tanning agent, an anti-microbial agent, a de-pigmentation agent, and anti-aging agent, an anti-fungal agent, and an insect repellent and a combination thereof, and wherein one or more of said agents may be topically active.
- [c5] 5. A sunscreen composition according to claim 1 wherein said inorganic sunscreen agent is titanium dioxide, zinc oxide, silica or silicon dioxide or mixtures thereof.
- [c6] 6. A sunscreen composition according to claim 5 wherein said inorganic sunscreen agent is titanium dioxide.
- [c7] 7. A sunscreen composition according to claim 6 wherein said titanium dioxide has a primary particle size of less than about 30 nm.

- [c8] 8.A sunscreen composition according to claim 1 wherein said emollient is a salt of a fatty acid, where said salt of said fatty acid has been determined to be non-endocrine disrupting.
- [c9] 9.A sunscreen composition according to claim 1 wherein said composition has a pH of at least of 5.
- [c10] 10.A sunscreen composition according to claim 9 wherein said pH is from about 6.5 to about 8.5.
- [c11] 11.A sunscreen composition according to claim 1 having a Sun Protection Factor (SPF) of at least 10, and preferably an immuno-responsiveness factor (IRF) of greater than zero, and preferably a non-endocrine disrupter (NED) factor not greater than zero.
- [c12] 12.A method of protecting mammalian skin from harmful effects of ultraviolet -A and ultraviolet-B radiation and enhancing skin immunocompetency comprising topically applying to said skin an effective amount of a UV-protective composition, said composition comprising;
- (a)at least one sunscreen or sunblock active agent in an amount effective to protect said skin against actinic radiation from sunlight;
  - (b)at least one ultramarine pigment that imparts a color other than white to an emulsion with a titanium dioxide or zinc oxide, said color substantially disappearing during application to said skin;
  - (c)agents of said UV-protective compositions free of any known or suspected endocrine disrupters;
  - (d)a non-endocrine disruptive, cytoprotective mixture made of natural substances, said mixture comprising a glucose-rich mannose-containing oligosaccharide or oligosaccharides obtained from and used with aloe barbadensis Miller that can function as the at least one emollient, and optionally;
  - (e)aminoacids, vitamins or provitamins, nucleoderivatives, and vegetable

extracts, wherein said aminoacids comprise tryptophan, histidine, phenylalanine, tyrosine, said vitamins and provitamins comprise vitamin B6, vitamin A, vitamin E, tocopherols, betacarotene, bioflavonoids, nucleotides and polymers thereof, cascara, frangula, camomile, hyperic, calendula, elicriso, licorice or essential oils thereof;

and;

(f) sufficient water to form other than a white colored emulsion.

- [c13] 13. The method of claim 12, wherein said composition comprises from about .0001% to about 10% (w/w) of said non-endocrine disrupting agents and said cytoprotective agents.
- [c14] 14. The method of claim 13, wherein said composition comprises about .01% to about 1% (w/w) of said non-endocrine disrupting agents and said cytoprotective agents.
- [c15] 15. The method of claim 14, wherein said composition comprises about 0.1% to about 0.5% (w/w) of said non-endocrine disrupting agents and said cytoprotective agents.
- [c16] 16. The method of claims 12-15, wherein said composition is formulated into a solid, a liquid, an aerosol, a cream, a lotion, an ointment, a microemulsion, a solution, or a gel form.
- [c17] 17. The method of claims 12-16, wherein said non-endocrine disrupting and cytoprotective composition further comprises an inorganic sunblock or sunscreen agent.
- [c18] 18. The method of claim 17, wherein said sunscreen agent is selected from the group of non-endocrine disrupting agents consisting of butyl-methoxydibenzoylmethane and other dibenzoyl etheric containing compositions.
- [c19] 19. The method of claims 12-18, wherein said composition is cytoprotective.
- [c20] 20. The method of claim 12 wherein said sunblock agent is selected from the

group consisting of zinc oxide and titanium dioxide.

[c21] 21. The method of claim 12 wherein said sunblock agent is selected from the group consisting of zinc oxide and titanium dioxide.

[c22] 22. The method of claim 12 wherein said sunblock agent is titanium dioxide.

[c23] 23. A method of protecting mammalian skin from harmful effects of ultraviolet -A and ultraviolet-B radiation and enhancing skin immunocompetency comprising topically applying to said skin an effective amount of a UV-protective composition, said composition comprising;

- (a) at least one sunscreen or sunblock active agent in an amount effective to protect said skin against actinic radiation from sunlight;
- (b) agents of said UV-protective compositions free of any known or suspected endocrine disrupters;
- (c) a non-endocrine disruptive, cytoprotective mixture made of natural substances, said mixture comprising a glucose-rich mannose-containing oligosaccharide or oligosaccharides obtained from and used with aloe barbadensis Miller that can function as the at least one emollient, and optionally;
- (d) aminoacids, vitamins or provitamins, nucleoderivatives, and vegetable extracts, wherein said aminoacids comprise tryptophan, histidine, phenylalanine, tyrosine, said vitamins and provitamins comprise vitamin B6, vitamin A, vitamin E, tocopherols, betacarotene, bioflavonoids, nucleotides and polymers thereof, cascara, frangula, camomile, hyperic, calendula, elicriso, licorice or essential oils thereof;

and;

(e) sufficient water to form a well mixed emulsion.

[c24] 24. A method of protecting mammalian skin from harmful effects of ultraviolet -A and ultraviolet-B radiation and enhancing skin immunocompetency comprising topically applying to said skin an effective amount of a UV-protective composition, said composition comprising;

- (a) at least one sunscreen or sunblock active agent in an amount effective to

protect said skin against actinic radiation from sunlight;  
(b)agents of said UV-protective compositions free of any known or suspected endocrine disrupters;  
(c)a non-endocrine disruptive, cytoprotective mixture made of natural substances, said mixture comprising a glucose-rich mannose-containing oligosaccharide or oligosaccharides obtained from and used with aloe barbadensis Miller that can function as the at least one emollient, and;  
(d) sufficient water to form a well mixed emulsion.

[c25] 25.A method of making a UV-protective composition comprising;  
(a)adding de-ionized water to a vessel;  
(b)then heating the water;  
(c)then, adding a carrier oil and an emollient to said vessel;  
(d)then, slowly adding an inorganic sunscreen agent to said vessel and heating and mixing said resultant composition;  
(e)then, adjusting the pH of said composition to above 5.

[c26] 26.A UV-protective composition of claims 1,4, 12, 23, 24, and 25 containing about 2% to about 25% of an inorganic sun-block or sunscreen agent, from about 0.5% to about 10% of an emollient and from about 0.5 to about 10% of an oil component comprising a carrier oil, preferably an essential oil from natural occurring substances.

[c27] 27.A composition according to claims 1,4, 12, 23, and 24-26, wherein the ratio of inorganic sunscreen agent to oil component is from about 0:3 to about 1:1.